

# Ethane, hexafluoro-

<b>Other names:</b>	1,1,1,2,2,2-Hexafluoroethane C2F6 Ethane, 1,1,1,2,2,2-hexafluoro- F-116 FREON 116 Fluorocarbon 116 Freon 1166SY HFC 116 Hexafluoroethane PERFLUOROETHANE R 116 R-116 REFRIGERANT-116 UN 2193
<b>Inchi:</b>	InChI=1S/C2F6/c3-1(4,5)2(6,7)8
<b>InchiKey:</b>	WMIYKQLTONQJES-UHFFFAOYSA-N
<b>Formula:</b>	C2F6
<b>SMILES:</b>	FC(F)(F)C(F)(F)F
<b>Mol. weight [g/mol]:</b>	138.01
<b>CAS:</b>	76-16-4

## Physical Properties

Property code	Value	Unit	Source
dm	0.00	debye	KDB
gf	-1258.00	kJ/mol	KDB
hf	-1344.00 ± 5.00	kJ/mol	NIST Webbook
hf	-1330.00	kJ/mol	NIST Webbook
hf	-1331.00 ± 8.00	kJ/mol	NIST Webbook
hf	-1344.00 ± 4.00	kJ/mol	NIST Webbook
hf	-1344.00	kJ/mol	KDB
hfus	4.59	kJ/mol	Joback Method
hvap	12.55	kJ/mol	Joback Method
ie	14.60	eV	NIST Webbook
ie	14.40	eV	NIST Webbook
ie	13.60	eV	NIST Webbook
log10ws	-1.98		Crippen Method
logp	2.111		Crippen Method

mvol	49.660	ml/mol	McGowan Method
pc	3013.01 ± 3.44	kPa	NIST Webbook
pc	3042.00 ± 8.00	kPa	NIST Webbook
pc	3060.00	kPa	KDB
pc	3040.00 ± 1.10	kPa	NIST Webbook
pt	26.25 ± 0.00	kPa	NIST Webbook
pt	30.26 ± 0.01	kPa	NIST Webbook
rhoc	579.65 ± 19.32	kg/m <sup>3</sup>	NIST Webbook
rhoc	622.43 ± 9.94	kg/m <sup>3</sup>	NIST Webbook
rinpol	156.00		NIST Webbook
sl	250.54	J/mol×K	NIST Webbook
tb	195.00	K	KDB
tc	293.03 ± 0.01	K	NIST Webbook
tc	292.80	K	NIST Webbook
tc	292.66 ± 0.05	K	NIST Webbook
tc	293.01 ± 0.01	K	NIST Webbook
tc	292.85 ± 0.05	K	NIST Webbook
tc	293.00	K	KDB
tf	172.40	K	KDB
tf	166.85 ± 0.02	K	NIST Webbook
tf	172.65 ± 0.50	K	NIST Webbook
tf	173.10 ± 0.50	K	NIST Webbook
tt	173.08 ± 0.01	K	NIST Webbook
tt	173.10 ± 0.02	K	NIST Webbook
vc	0.222	m <sup>3</sup> /kmol	KDB
zc	0.2788500		KDB

## Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	83.14	J/mol×K	234.32	Joback Method
cpg	114.61	J/mol×K	357.85	Joback Method
cpg	105.32	J/mol×K	316.67	Joback Method
cpg	100.24	J/mol×K	296.08	Joback Method
cpg	94.86	J/mol×K	275.50	Joback Method
cpg	110.11	J/mol×K	337.26	Joback Method
cpg	89.16	J/mol×K	254.91	Joback Method
cpl	131.30	J/mol×K	195.00	NIST Webbook
hfust	2.69	kJ/mol	173.10	NIST Webbook
hfust	3.74	kJ/mol	104.00	NIST Webbook
hfust	2.69	kJ/mol	173.10	NIST Webbook

hsubt	26.00	kJ/mol	103.00	NIST Webbook
hvapt	16.15	kJ/mol	194.87	NIST Webbook
hvapt	16.15	kJ/mol	194.90	KDB
hvapt	17.10	kJ/mol	188.00	NIST Webbook
hvapt	17.30	kJ/mol	186.00	NIST Webbook
hvapt	16.15	kJ/mol	195.00	NIST Webbook
pvap	2270.00	kPa	281.23	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	1847.00	kPa	273.27	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	2050.00	kPa	277.24	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	1659.00	kPa	269.27	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	2387.00	kPa	283.23	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa

pvap	2509.00	kPa	285.23	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	2636.00	kPa	287.22	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	2769.00	kPa	289.22	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	2839.00	kPa	290.23	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	2873.00	kPa	290.72	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	2909.00	kPa	291.22	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa

pvap	2946.00	kPa	291.72	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	2982.00	kPa	292.22	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	1062.90	kPa	253.65	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	1226.40	kPa	258.46	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	1415.30	kPa	263.43	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	1415.30	kPa	263.45	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa

pvap	1621.10	kPa	268.33	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	1850.00	kPa	273.29	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	1862.00	kPa	273.32	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	2100.60	kPa	278.19	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	2392.00	kPa	283.22	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	2385.80	kPa	283.25	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa

pvap	2697.60	kPa	288.20	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	2697.60	kPa	288.30	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	1489.00	kPa	265.28	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	2903.40	kPa	291.22	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	2976.20	kPa	292.22	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	1839.00	kPa	273.06	Isothermal vapour-liquid equilibrium data for the binary systems of (CHF3 or C2F6) and n-heptane
pvap	2100.00	kPa	278.07	Isothermal vapour-liquid equilibrium data for the binary systems of (CHF3 or C2F6) and n-heptane

pvap	2388.00	kPa	283.07	Isothermal vapour-liquid equilibrium data for the binary systems of (CHF <sub>3</sub> or C <sub>2</sub> F <sub>6</sub> ) and n-heptane
pvap	2701.00	kPa	288.07	Isothermal vapour-liquid equilibrium data for the binary systems of (CHF <sub>3</sub> or C <sub>2</sub> F <sub>6</sub> ) and n-heptane
pvap	2972.00	kPa	292.07	Isothermal vapour-liquid equilibrium data for the binary systems of (CHF <sub>3</sub> or C <sub>2</sub> F <sub>6</sub> ) and n-heptane
pvap	1240.00	kPa	258.55	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	1300.00	kPa	260.26	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	1390.00	kPa	262.75	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	1480.00	kPa	264.72	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling



pvap	1550.00	kPa	266.78	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	1650.00	kPa	268.76	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	1730.00	kPa	270.81	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	1830.00	kPa	272.77	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	2000.00	kPa	276.28	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	2160.00	kPa	279.30	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling

pvap	2330.00	kPa	282.31	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	2470.00	kPa	284.83	Phase Equilibria for Perfluoroethane + (n-Perfluorohexane or n-Perfluorooctane) Binary Systems: Measurement and Modeling
pvap	1851.00	kPa	273.27	Isothermal Vapor-Liquid Equilibrium Data for the Hexafluoroethane (R116) + n-Butane System at Temperatures from 273 to 323 K
pvap	1328.00	kPa	261.29	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	128.70	kPa	199.64	Vapor-Liquid Equilibrium Measurements for the Ethane + Hexafluoroethane System over a Temperature Range from (199.64 to 242.93) K
pvap	243.40	kPa	213.06	Vapor-Liquid Equilibrium Measurements for the Ethane + Hexafluoroethane System over a Temperature Range from (199.64 to 242.93) K

pvap	453.10	kPa	228.28	Vapor-Liquid Equilibrium Measurements for the Ethane + Hexafluoroethane System over a Temperature Range from (199.64 to 242.93) K
pvap	765.10	kPa	242.93	Vapor-Liquid Equilibrium Measurements for the Ethane + Hexafluoroethane System over a Temperature Range from (199.64 to 242.93) K
pvap	1183.00	kPa	257.31	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	1048.00	kPa	253.29	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	928.00	kPa	249.31	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	816.00	kPa	245.32	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa

pvap	769.00	kPa	243.33	Vapor liquid equilibrium data for the hexafluoroethane + carbon dioxide system at temperatures from 253 to 297K and pressures up to 6.5MPa
pvap	1038.20	kPa	252.80	Vapor liquid equilibrium measurements and correlations for an azeotropic system of ethane + hexafluoroethane
pvap	883.00	kPa	247.63	Vapor liquid equilibrium measurements and correlations for an azeotropic system of ethane + hexafluoroethane
pvap	88.50	kPa	192.63	Vapor liquid equilibrium measurements and correlations for an azeotropic system of ethane + hexafluoroethane
pvap	73.90	kPa	189.31	Vapor liquid equilibrium measurements and correlations for an azeotropic system of ethane + hexafluoroethane
pvap	2832.90	kPa	290.22	Vapor liquid equilibrium data for the (hexafluoroethane +1,1,1,2-tetrafluoroethane) system at temperatures from 263 to 353K and pressures up to 4.16MPa
pvap	2708.00	kPa	288.25	Isothermal Vapor-Liquid Equilibrium Data for the Hexafluoroethane (R116) + n-Butane System at Temperatures from 273 to 323 K
rhoI	1589.99	kg/m3	195.00	KDB

sfust	35.90	J/mol×K	104.00	NIST Webbook
sfust	15.50	J/mol×K	173.10	NIST Webbook
srf	0.02	N/m	193.20	KDB
svapt	82.88	J/mol×K	194.87	NIST Webbook

## Correlations

Information	Value
Property code	pvap
Equation	$\ln(P_{vp}) = A + B/(T + C)$
Coeff. A	1.44741e+01
Coeff. B	-1.84255e+03
Coeff. C	-8.04800e+00
Temperature range (K), min.	137.93
Temperature range (K), max.	293.03

Information	Value
Property code	pvap
Equation	$\ln(P_{vp}) = A + B/T + C \cdot \ln(T) + D \cdot T^2$
Coeff. A	5.23490e+01
Coeff. B	-3.01585e+03
Coeff. C	-6.23149e+00
Coeff. D	1.57691e-05
Temperature range (K), min.	172.45
Temperature range (K), max.	293.00

## Datasets

### Speed of sound, m/s

Temperature, K - Gas	Pressure, kPa - Gas	Speed of sound, m/s - Gas
250.80	225.50	124.44
250.80	169.40	125.61
250.80	95.00	127.13
250.80	211.50	124.74

250.80	149.20	126.04
250.80	77.30	127.49
250.80	195.40	125.08
250.80	128.50	126.44
250.80	68.90	127.66
250.80	177.20	125.45
250.80	108.80	126.85
256.20	230.60	125.83
256.20	173.10	126.97
256.20	97.00	128.43
256.20	216.20	126.14
256.20	152.50	127.38
256.20	78.90	128.78
256.20	199.70	126.45
256.20	131.30	127.77
256.20	70.40	128.95
256.20	181.10	126.82
256.20	111.10	128.17
261.50	235.70	127.24
261.50	176.80	128.32
261.50	99.00	129.73
261.50	221.00	127.51
261.50	155.70	128.71
261.50	80.50	130.09
261.50	204.00	127.83
261.50	134.10	129.1
261.50	71.80	130.24
261.50	185.00	128.19
261.50	113.40	129.49
266.80	240.80	128.62
266.80	180.50	129.65
266.80	101.10	131.02
266.80	225.60	128.87
266.80	158.90	130.04
266.80	82.10	131.33
266.80	208.30	129.18
266.80	136.80	130.41
266.80	73.30	131.5
266.80	188.90	129.52
266.80	115.70	130.77
272.10	246.80	129.96
272.10	184.30	131.01
272.10	103.10	132.3
272.10	230.50	130.23

272.10	162.10	131.35
272.10	83.70	132.62
272.10	212.60	130.53
272.10	139.60	131.72
272.10	74.70	132.77
272.10	192.80	130.85
272.10	118.00	132.05
277.40	251.80	131.3
277.40	188.00	132.3
277.40	105.10	133.57
277.40	235.20	131.58
277.40	165.40	132.66
277.40	85.40	133.89
277.40	216.90	131.84
277.40	142.30	132.99
277.40	76.20	134.03
277.40	196.70	132.17
277.40	120.40	133.33
282.70	256.90	132.64
282.70	191.60	133.6
282.70	107.10	134.83
282.70	239.90	132.89
282.70	168.60	133.93
282.70	87.00	135.13
282.70	221.30	133.16
282.70	145.10	134.28
282.70	77.60	135.27
282.70	200.50	133.47
282.70	122.70	134.61
287.90	262.00	133.96
287.90	195.40	134.9
287.90	109.10	136.08
287.90	244.50	134.2
287.90	171.80	135.21
287.90	88.60	136.37
287.90	225.60	134.47
287.90	147.90	135.54
287.90	79.10	136.49
287.90	204.40	134.76
287.90	125.00	135.85
293.20	267.00	135.26
293.20	229.90	135.75
293.20	199.00	136.16
293.20	150.60	136.8

293.20	111.10	137.31
293.20	265.60	135.26
293.20	229.90	135.74
293.20	175.10	136.49
293.20	127.30	137.09
293.20	90.30	137.61
293.20	249.20	135.5
293.20	208.30	136.06
293.20	175.00	136.48
293.20	127.30	137.08
293.20	85.40	137.65
293.20	249.10	135.49
293.20	203.70	136.09
293.20	150.60	136.79
293.20	111.10	137.3
293.20	80.50	137.71
298.50	272.00	136.54
298.50	202.80	137.42
298.50	113.10	138.55
298.50	253.90	136.77
298.50	178.30	137.71
298.50	91.90	138.8
298.50	234.20	137.02
298.50	153.40	138.03
298.50	82.00	138.94
298.50	212.20	137.32
298.50	129.70	138.33
303.70	277.20	137.85
303.70	206.40	138.67
303.70	115.20	139.76
303.70	258.60	138.06
303.70	181.50	138.98
303.70	93.50	140.03
303.70	238.50	138.3
303.70	156.20	139.26
303.70	83.40	140.14
303.70	216.10	138.57
303.70	132.00	139.56
308.90	282.10	139.06
308.90	210.10	139.9
308.90	117.20	140.94
308.90	263.30	139.32
308.90	184.70	140.18
308.90	95.10	141.19



308.90	242.80	139.54
308.90	158.90	140.47
308.90	84.90	141.33
308.90	219.90	139.79
308.90	134.20	140.73
314.10	287.20	140.33
314.10	213.80	141.12
314.10	119.20	142.15
314.10	267.90	140.53
314.10	187.90	141.4
314.10	96.80	142.38
314.10	247.10	140.76
314.10	161.60	141.69
314.10	86.30	142.49
314.10	223.70	140.99
314.10	136.60	141.94
319.30	292.20	141.56
319.30	217.50	142.34
319.30	121.20	143.32
319.30	272.70	141.78
319.30	191.20	142.61
319.30	98.40	143.57
319.30	251.30	141.97
319.30	164.40	142.88
319.30	87.70	143.67
319.30	227.60	142.24
319.30	138.90	143.13
324.50	297.10	142.79
324.50	221.20	143.52
324.50	123.20	144.49
324.50	277.30	142.99
324.50	194.40	143.8
324.50	100.00	144.71
324.50	255.70	143.2
324.50	167.20	144.07
324.50	89.20	144.83
324.50	231.50	143.44
324.50	141.20	144.31

Reference

<https://www.doi.org/10.1021/acs.jced.6b00536>



<b>h<sub>vap</sub>:</b>	Enthalpy of vaporization at standard conditions
<b>h<sub>vapt</sub>:</b>	Enthalpy of vaporization at a given temperature
<b>ie:</b>	Ionization energy
<b>log<sub>10</sub>ws:</b>	Log <sub>10</sub> of Water solubility in mol/l
<b>log<sub>p</sub>:</b>	Octanol/Water partition coefficient
<b>mcvol:</b>	McGowan's characteristic volume
<b>pc:</b>	Critical Pressure
<b>pt:</b>	Triple Point Pressure
<b>pvap:</b>	Vapor pressure
<b>rhoc:</b>	Critical density
<b>rho<sub>l</sub>:</b>	Liquid Density
<b>rinpol:</b>	Non-polar retention indices
<b>sfust:</b>	Entropy of fusion at a given temperature
<b>sl:</b>	Liquid phase molar entropy at standard conditions
<b>speedsl:</b>	Speed of sound in fluid
<b>srf:</b>	Surface Tension
<b>svapt:</b>	Entropy of vaporization at a given temperature
<b>tb:</b>	Normal Boiling Point Temperature
<b>tc:</b>	Critical Temperature
<b>tf:</b>	Normal melting (fusion) point
<b>tt:</b>	Triple Point Temperature
<b>vc:</b>	Critical Volume
<b>zc:</b>	Critical Compressibility

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